

The following candidates were proposed for election as Fellows of the Society, the names of the proposers from personal knowledge being appended :—

Arthur Burnet, Artificer, at the University Observatory, Oxford (proposed by H. H. Turner);
 George Byfield, A.L.A.A., 32 Lushington Road, Willesden, London, N.W. 10 (proposed by B. G. Harrison);
 Austin Wilfred Dobson, Nautical Instructor, 52 Elwick Road, West Hartlepool (proposed by P. J. Melotte); and
 Thomas Humphries, formerly Surveyor-General of New Zealand, Stevens Road, Lower Hutt, New Zealand (proposed by C. E. Adams).

Seventy-six presents were announced as having been received since the last Meeting, including, amongst others :—

Berliner Astronomisches Jahrbuch, 1917, 1918, 1919, presented by the Astronomer Royal; and
 Galileo, Dialogo, Florence, 1710, and Padua, 1744.
 La Caille, Lectiones elementares Mechanicæ, 1759.
 La Caille, Lectiones elementares Mathematicæ, 1772.
 Mattioli, Meteore celesti, Parma, 1706.
 Bion, L'usage des globes, Paris, 1710.
 Scolastico, Dialogo, Padua, 1745; and
 Capt. Jacob Rowe, Navigation improved, London, 1725, presented by Col. Grove-Hills; and
 Photographs of Nebulæ, etc. presented by the Mount Wilson Observatory.

The Angular Diameter of α Orionis. By Professor G. E. Hale.

[*Extract from a letter to Professor Eddington.*]

December 20, 1920.

I am sure you will be interested to hear that on the night of December 13 Pease and Anderson made a first approximate measure of the diameter of α Orionis with the 20-foot Michelson interferometer attached to the 100-inch telescope. This instrument, which we built last summer, is mounted at the upper end of the tube. Two mirrors, which can be moved along carefully planed ways on the supporting steel girder, receive the light from the star and reflect it to a second pair of mirrors, mounted just above and to the right and left of the Cassegrain mirror. These send it to the 100-inch mirror, after which it follows the usual path. The observations are made at the 134-foot Cassegrain focus, with powers ranging from 1500 to 3000. Two openings in the steel girder also admit light from the star to the 100-inch mirror, to produce "zero fringes" for comparison purposes.

In the case of most stars the receiving mirrors can be placed the full length of the girder apart without decreasing the visibility of the fringes, which are extremely sharp and distinct, even on a night of seeing 2 on a scale of 10. With α Orionis the fringes were clearly visible when these mirrors were 6 feet apart. At 8 feet separation the visibility was decidedly lower, and at 10 feet the fringes had disappeared. Merrill had previously observed the decreased visibility at 8 feet for several position-angles, showing that the effect is not due to duplicity of α Orionis. At 10 feet, to make certain that the adjustments were perfect, the telescope was turned to Procyon and γ Orionis, both of which showed perfectly sharp fringes, whereas α Orionis showed none. The reappearance of the fringes at greater distances was not looked for, but it will be observed as soon as the apparatus for moving and adjusting the receiving mirrors can be improved. At present it takes Pease from half an hour to an hour to find the fringes after the mirrors have been moved. The final adjustment is made by means of optical compensating apparatus at the eye-end.

We have not yet determined the mean wave-length of the light of α Orionis, but a special quartz device is now being made for this purpose. Assuming zero visibility to occur when the receiving mirrors are 10 feet apart, and a mean wave-length of $\lambda 5500$, the angular diameter comes out $0''.045$. This is not corrected, of course, for any effect of decreased intensity toward the limb of the star. Using the mean of three parallax determinations, two trigonometric and one by Adams, we obtain a first rough value of 540,000,000 km. for the linear diameter. This, of course, is very uncertain. But the angular diameter, which is in such close agreement with your theoretical value, is probably correct within about 10 per cent.

Pease will repeat these measures and attack other stars as soon as the interferometer has been perfected. During the past week, in spite of much cloudy weather, he observed α Ceti, α Tauri, and β Geminorum with the mirrors set at 13 feet apart. All of these stars showed definite decrease of visibility when compared with Procyon, which showed none at the same separation of the mirrors.

Hind's New Star of 1848 (Nova Ophiuchi No. 2).

By E. E. Barnard. (Plate 6.)

No one will question the fact that there must be hundreds of thousands of old novæ in the sky to-day which will be within the reach of modern instruments. Indeed, I believe I have accidentally come across some of these in my visual observations. It is unfortunate that we cannot identify with certainty the older novæ which were observed before the era of accurate observation, such as those of 1572 and 1670 (though Hind believed he had